

# SM 3H 5.1-5.4 Review

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Evaluate the expression using the values given in the table.

1)  $(g \circ f)(1)$

1) \_\_\_\_\_

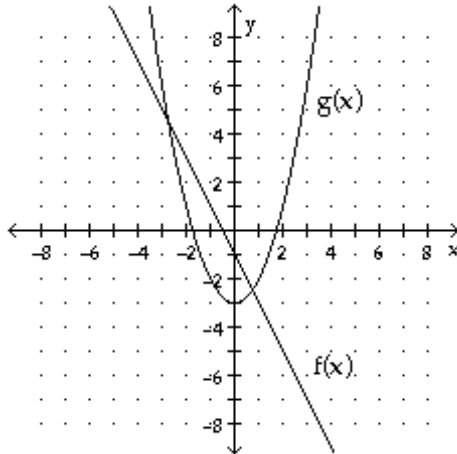
x	1	5	11	12
f(x)	-3	11	3	12

x	-5	-3	1	3
g(x)	1	-8	5	11

Evaluate the expression using the graphs of  $y = f(x)$  and  $y = g(x)$ .

2) Evaluate  $(fg)(1)$ .

2) \_\_\_\_\_



For the given functions  $f$  and  $g$ , find the requested composite function value.

3)  $f(x) = 2x + 8$ ,  $g(x) = 1/x$ ; Find  $(g \circ f)(3)$ .

3) \_\_\_\_\_

For the given functions  $f$  and  $g$ , find the requested composite function.

4)  $f(x) = 4x^2 + 5x + 7$ ,  $g(x) = 5x - 5$ ; Find  $(g \circ f)(x)$ .

4) \_\_\_\_\_

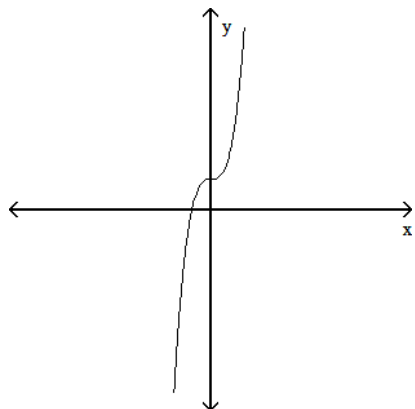
Indicate whether the function is one-to-one.

5)  $\{(7, 2), (8, 2), (9, 3), (10, 9)\}$

5) \_\_\_\_\_

Use the horizontal line test to determine whether the function is one-to-one.

6)



6) \_\_\_\_\_

Find the domain of the composite function  $f \circ g$ .

7)  $f(x) = x + 7$ ;  $g(x) = \frac{6}{x + 10}$

7) \_\_\_\_\_

Find the inverse of the function and state its domain and range .

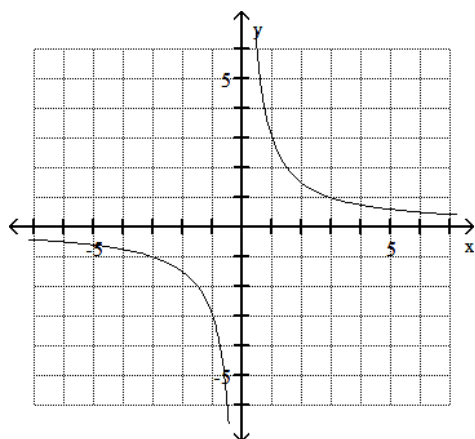
8)  $\{(2, -9), (9, -2), (1, 4), (-1, -4)\}$

8) \_\_\_\_\_

The graph of a one-to-one function  $f$  is given. Draw the graph of the inverse function  $f^{-1}$  as a dashed line or curve.

9)  $f(x) = \frac{3}{x}$

9) \_\_\_\_\_



The function  $f$  is one-to-one. Find its inverse.

10)  $f(x) = \frac{-3x - 6}{5x - 5}$

10) \_\_\_\_\_

Approximate the value using a calculator. Express answer rounded to three decimal places.

11)  $4.11^{5.9}$

11) \_\_\_\_\_

Determine whether the given function is exponential or not. If it is exponential, identify the value of the base  $a$ .

12)

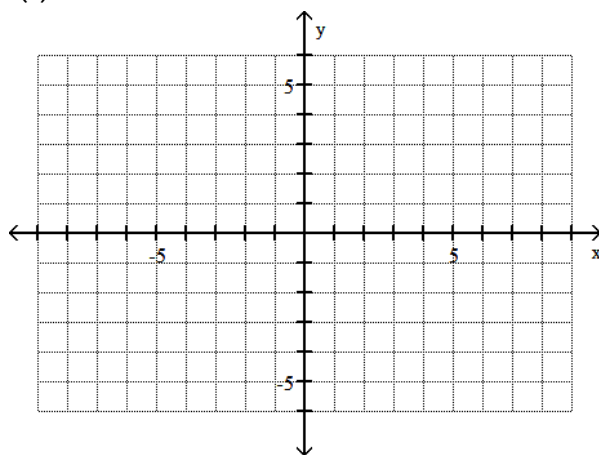
$x$	$H(x)$
-1	$\frac{11}{4}$
0	1
1	$\frac{4}{11}$
2	$\frac{16}{121}$
3	$\frac{64}{1331}$

12) \_\_\_\_\_

Use transformations to graph the function. Determine the domain, range, and horizontal asymptote of the function. Use tables!

13)  $f(x) = -2x^3 + 4$

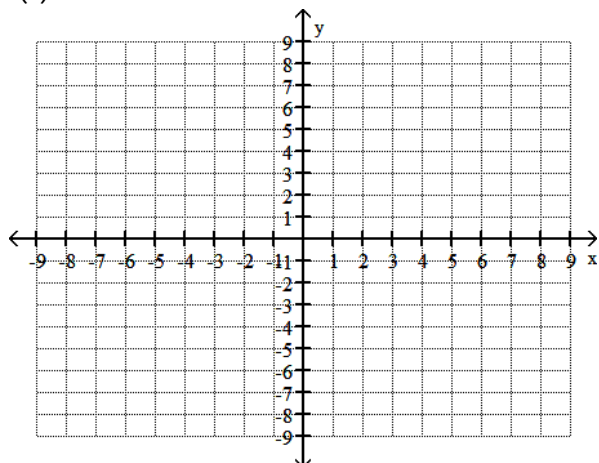
13) \_\_\_\_\_



Graph the function. Use tables !

14)  $f(x) = e^{3x} - 1$

14) \_\_\_\_\_



Solve the equation.

15)  $4^{-x} = \frac{1}{256}$

15) \_\_\_\_\_

16)  $4(3x - 7) = 16$

16) \_\_\_\_\_

17)  $2^{x^2 - 3} = 64$

17) \_\_\_\_\_

18)  $e^x - 5 = \left(\frac{1}{e^4}\right)^{x+2}$

18) \_\_\_\_\_

Change the exponential expression to an equivalent expression involving a logarithm.

19)  $5^2 = 25$

19) \_\_\_\_\_

20)  $e^x = 7$

20) \_\_\_\_\_

Find the exact value of the logarithmic expression.

21)  $\log_8 \frac{1}{64}$

21) \_\_\_\_\_

22)  $\log_{10} 1000$

22) \_\_\_\_\_

23)  $\ln e^3$

23) \_\_\_\_\_

Use a calculator to evaluate the expression. Round your answer to three decimal places

24)  $\log \frac{5}{6}$

24) \_\_\_\_\_

25)  $\frac{e \log 80 + \ln 8}{\log 3 + \ln 20}$

25) \_\_\_\_\_

Find the domain of the function.

26)  $f(x) = \ln(7 - x)$

26) \_\_\_\_\_

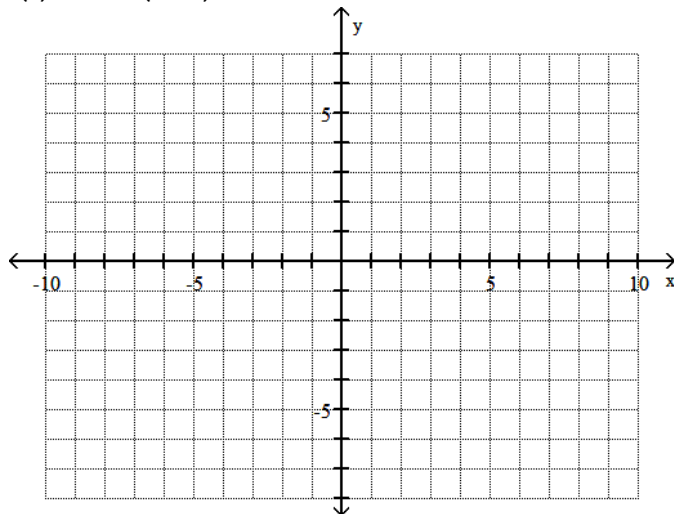
27)  $f(x) = \ln \left( \frac{1}{x - 2} \right)$

27) \_\_\_\_\_

Graph the function. Use tables !

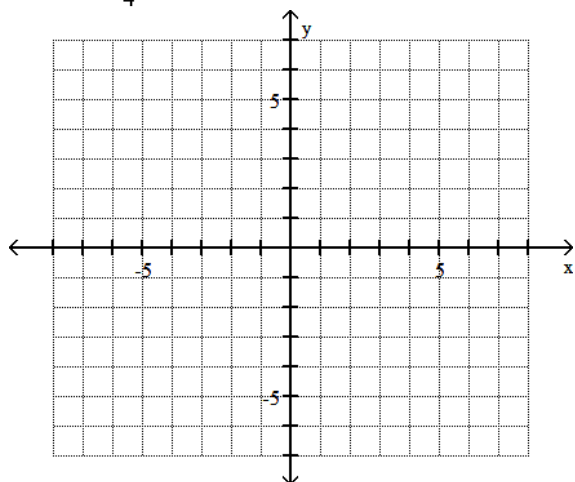
28)  $f(x) = 2 - \ln(x + 4)$

28) \_\_\_\_\_



29)  $f(x) = \log_4 (x - 2)$

29) \_\_\_\_\_



Solve the equation.

30)  $\log_5 x = 2$

30) \_\_\_\_\_

31)  $\log_3 (x + 2) = -2$

31) \_\_\_\_\_

32)  $\log_{72} (x^2 - x) = 1$

32) \_\_\_\_\_

33)  $2 + 7 \ln x = 0$

33) \_\_\_\_\_

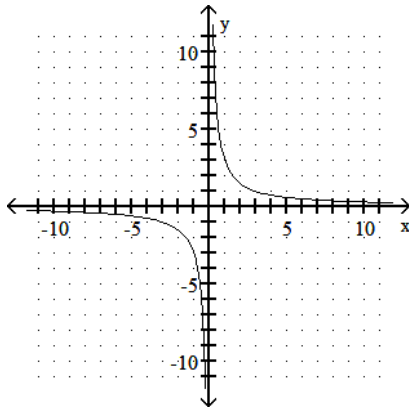
34)  $e^{x+2} = 7$

34) \_\_\_\_\_

## Answer Key

### Testname: SM 3H 5.1-5.4 REVIEW

- 1) -8
- 2) 6
- 3)  $\frac{1}{14}$
- 4)  $20x^2 + 25x + 30$
- 5) No
- 6) Yes
- 7)  $\{x \mid x \neq -10\}$
- 8)  $\{(-9, 2), (-2, 9), (4, 1), (-4, -1)\}$   $D = \{-9, -2, 4, -4\}$ ;  $R = \{2, 9, 1, -1\}$
- 9) Function is its own inverse

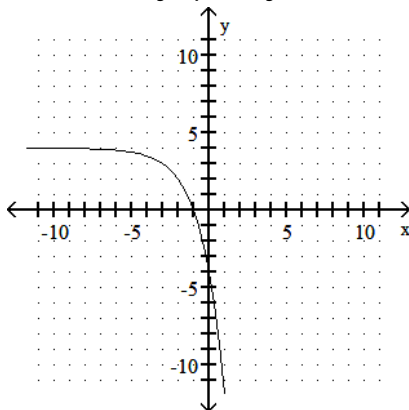


10)  $f^{-1}(x) = \frac{5x - 6}{5x + 3}$

11) 9.426

12) Exponential;  $a = \frac{4}{11}$

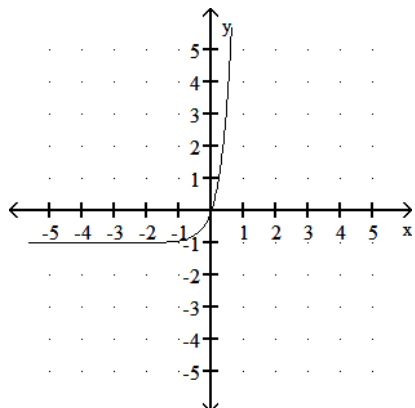
13) domain of  $f$ :  $(-\infty, \infty)$ ; range of  $f$ :  $(-\infty, 4)$ ;  
horizontal asymptote:  $y = 4$



# Answer Key

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14)



15) {4}

16) {3}

17) {3, -3}

18)  $\left\{-\frac{3}{5}\right\}$

19)  $\log_5 25 = 2$

20)  $\ln 7 = x$

21) -2

22) 3

23) 3

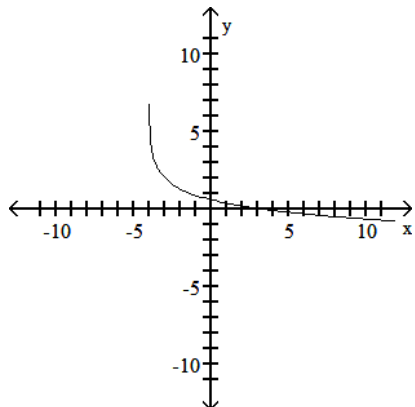
24) -0.079

25) 2.088

26)  $(-\infty, 7)$

27)  $(2, \infty)$

28)

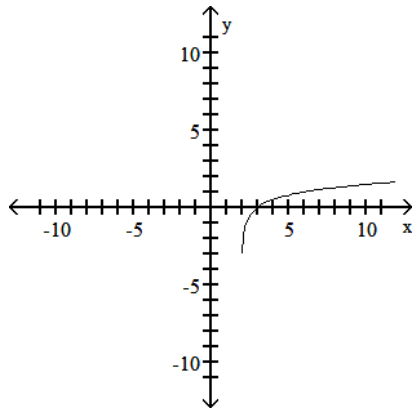




# Answer Key

Testname: SM 3H 5.1-5.4 REVIEW

29)



30) {25}

31)  $\left\{-\frac{17}{9}\right\}$

32) {-8, 9}

33)  $\{e^{-2/7}\}$

34)  $\{\ln 7 - 2\}$